

insured. Even while I was in the office insuring it a stupid porter tilted it over face downwards to my great grief, as I had little hope that the plaster would hold with such a weight if the case were subjected to this treatment on the way. I was relieved in my mind a few days later by its safe arrival at home. From this time patience alone was required, and by Christmas, with the aid of Mr. De Wilde, the whole leaf was uncovered and varnished and all the cracks filled in with modelling clay.

The other specimens were obtained in more or less the same way. The small feather palm was extracted whole with the assistance of Mr. Henry Keeping, of the Woodwardian Museum, but fell to pieces on the shutter to which it was transferred for carriage, and great care was needed to put them together as they now are. The Studland fan-palm being rotted by exposure on the face of the cliff and being penetrated everywhere by rootlets, fell into a hundred pieces, and only the centre of the leaf could be pieced together the rest being pulverised in its journey from Studland to Wareham.

J. S. GARDNER

FATHER SECCHI

SOME little time ago we announced the serious illness of Father Secchi, the well-known astronomer and Director of the Observatory of the Collegio Romano, at Rome; last week we chronicled his death, which occurred on the 26th ult. The illness which has thus terminated fatally, has cut him off, we may say, in the prime of his life, and in the midst of his work; for, till he was taken ill, there were no signs of any diminution of his energy, and he was only fifty-nine years of age when he died.

Secchi was born at Reggio, on June 29, 1818. Educated and trained from early youth as a Jesuit, we hear of him first in connection with science as Professor of Physics at Georgetown College, near Washington, and next as holding the same chair in the Roman College at Rome. It was in connection with the observatory attached to this institution that almost all Secchi's work for the last thirty years has been done. While the Roman College was in papal hands no funds were spared to make the observatory as complete as possible. Secchi had instruments and assistants in abundance, and his various series of "Memoirs" testify to his industry in many fields, while his position gave him great facilities for giving the widest publicity to his work. What he lacked in originality he made up in assiduity, and hence, although he has left no great life work on any one subject behind him, there is, we think, hardly any question which has turned up touching observations in astronomy, magnetism or meteorology on which a multitude of papers have not been written by his busy pen. Many of these papers are very admirable and show great penetration and power of generalisation as well as a wide grasp of many subjects.

Secchi's great interest in solar physics was doubtless aroused, when in America, by assisting Prof. Henry in making the first experiments on the heat radiated by different portions of the sun's disc by means of the thermo-electric pile. His interest in spectroscopy dates from Janssen's visit to Rome, when on his scientific mission to Italy and Greece. In both these branches of work Secchi has been an ardent observer and voluminous writer. He photographed the eclipse of 1860 in Spain, and observed the one of 1870 in Sicily. In 1867 he was in Paris exhibiting his universal meteorograph in the exhibition of that year, and giving lectures, some of which eventually formed the basis of his book on the Sun, a second edition of which appeared last year. Besides this book on the Sun, he has written others on the Unity of the Physical Forces, and on the Stars, the latter of which has not yet appeared.

When the States of the Church became Italian the Roman College was among the institutions which were

turned to other uses by the new government. This now contains two most interesting museums, one of educational apparatus chiefly for primary instruction, and another for antiquities. The new Government, however, were extremely anxious not to interfere with Secchi's scientific labours and offered him the Chair of Astronomy in the new Roman University, at the same time granting ample funds for the prosecution of his inquiries. This Secchi accepted, but soon found his occupation gone, as he was commanded by the chief of the Jesuits to resign it, which he did. It is doubtful whether any *modus vivendi* would have been found if the king, whose foster-brother he was, had not stepped in between the Ministry and the Vatican, and suggested a compromise which would have left Secchi to continue his work under most favourable conditions, if the Jesuits had not again stepped in.

One of the most recent results of Secchi's energy has been the foundation of the Società degli Spettroscopisti Italiani, a society specially constituted for recording daily spectroscopic observations of the sun, chiefly at the various observatories of Italy.

There is no doubt that in the death of Father Secchi observational astronomy has sustained a great loss. His industry and skill were largely rewarded during his lifetime. In 1867 he received the great French prize of 100,000 francs. He was a member of most scientific societies, including our own Royal Society, and it must not be forgotten that if there may have been traits of Secchi's character open to criticism, the exigencies of his post, rather than the inclinations of the man, may have been to blame.

NOTES

THE French expedition for the observation of the approaching transit of Mercury consists of M. C. André and M. Angot, who formed likewise part of the expedition to New Caledonia, on the occasion of the transit of Venus. Ogden, in the State of Utah, has been selected by the French Institute as the most favourable locality for the observation, and the expedition is already under way to its destination. A Parisian millionaire, well known for his generosity towards scientific objects, has contributed 30,000 francs to defray the expenses of the observation.

WE regret to learn of the dangerous illness of the well-known mineralogist, M. Delafosse Gabriel, professor at the Muséum d'Histoire Naturelle of Paris. He is now in his eighty-third year, and has been for twenty years a member of the French Academy of Sciences.

THE Royal Academy of Sciences at Berlin has elected the well-known Prof. Noeldecke, of Strassburg, a corresponding member.

ARRANGEMENTS are being made at Paris for the erection of a fitting monument to the late Claude Bernard. The initiative has been made by the *Société de Biologie*, of which Bernard was one of the founders, and over the meetings of which he has presided during the past eleven years. The committee appointed for the purpose contains prominent names from all the leading scientific institutions of Paris.

THE death is announced of Mr. Joseph Bonomi, the distinguished Egyptologist, which occurred at Wimbledon Park on Sunday last, at the age of eighty-two. For the last sixteen years Mr. Bonomi has acted as Curator of the Soane Museum in Lincoln's Inn Fields. Mr. Bonomi went out to Egypt as early as 1824, and spent eight years on the banks of the Nile, drawing and studying the ancient temples and their wonderful sculptures. During this time he had adopted the Arab costume and mode of living, and by this means he was able to go on in the prosecution of his studies with his then limited resources. He returned

to England, where he remained till the visit of Lepsius in 1842, when he went out as artist in that expedition, which resulted in a large folio work of about twenty vols., published under the auspices of the King of Prussia. The Egyptian Court at the Crystal Palace was erected from Mr. Bonomi's designs and under his superintendence. He was also employed in the British Museum in arranging the department of Egyptian antiquities. Mr. Bonomi has rendered great service, not only by his illustrations, but also by his writings on subjects connected with the various countries in the east which he visited. These will be found in the *Transactions* of the Royal Society of Literature, Syro-Egyptian Society, British Association, &c. Mr. Bonomi leaves a great mass of notes and sketches of hieroglyphics which may yet be of great value to Egyptology.

At the General Monthly Meeting of the Royal Institution on Monday, the special thanks of the members were given to Mr. Warren De la Rue, D.C.L., for his donation of 50*l.* for the benefit of the Chemical Laboratory.

We would remind our readers that subscriptions are still being received for the Simon Testimonial Fund. A marble bust is the form of testimonial that has been decided on, and a small copy of this will be presented to each subscriber of two guineas and upwards. No testimonial was ever better deserved. Subscriptions may be sent to Robarts, Lubbock, and Co., Lombard Street, to the Hon. Secretary, 1, Adam Street, Adelphi, or to the Treasurer, General Register Office, Somerset House.

THE Atlas of Colorado, soon to be issued by the U.S. Geological Survey of the Territories, under Prof. F. V. Hayden, embodies the results of the geological and geographical work of the survey during the years from 1873 to 1876 inclusive. This Atlas will contain the following maps:—1. A general drainage map of Colorado on a scale of twelve miles to the inch. 2. An economic map of the same region, having as its basis the above-mentioned drainage map. This map will indicate the areas of arable, pasture, timber, coal, mineral, and desert land in as great detail as possible on the scale. 3. A general geological map, on which the areas covered by the principal formations will be shown. The drainage map will form the basis for this also. 4. A map showing the scheme of the primary triangulation in the state. Scale twelve miles to the inch. 5. Six topographical sheets showing the same area as that covered by the general drainage map, but in much more detail. The scale of these sheets is four miles to an inch. The relief of the country is indicated by contour lines, at vertical intervals of 200 feet. The area covered by each of these sheets is 11,500 square miles. 6. Six geological sheets, of which the bases are the six topographical sheets just mentioned. On these the detailed geology is expressed by colours. With the appearance of this map, Colorado will be better known, topographically and geologically, than any other State.

ONE of the leading publishing houses of Paris is making arrangements for the speedy appearance of an enormous work, “*Études sur l'Exposition de 1878*,” under the direction of M. E. Lacroix. This work is intended to be a complete record of the progress made in all the arts up to the present date, and its thoroughness and value have been assured by the promised co-operation of a large number of leading authorities. The French Ministers of Public Works, of Commerce, and of Agriculture have already promised all necessary assistance on the part of the Government, so that the undertaking will start under the most favourable auspices.

DR. SCHLIEMANN intends to resume his excavations at Hissarlik as soon as the country is at all safe to live in.

THE Society of Arts prize of 10*l.* for the best set of blowpipe apparatus that could be sold retail for one guinea, has been

awarded to Messrs. Letcher, of Camborne and St. Day, Cornwall. A second prize, consisting of a bronze medal, has been awarded to Herr Osterland, of Freiberg.

THE establishing of a branch of the U.S. National Observatory, to be placed at some elevated point in the West, has lately been agitated, and much is expected as the result of its completion.

ON July 16 an International Exhibition of the Paper Trade will be opened at Berlin and will last until August 31. The programme of the exhibition is already finally settled, and the objects exhibited will be divided into eight different groups, viz.: 1. Raw materials and articles used for making paper, paste-board, &c. 2. Machines and tools used for making and working paper. 3. Paper and boards of all descriptions. 4. Paper, as far as it is employed for printing, paper-hangings, &c. 5. Articles made of paper or *papier-mâché*. 6. Paper as used for technical or building purposes. 7. Writing and drawing materials. 8. Objects, books, &c., relating to the history and literature of paper. A number of prizes will be awarded for the best contributions.

THE system of agricultural weather-warnings in France, carried on under the direction of the Paris Observatory, continues to be rapidly developed and extended to all parts of the country. The warnings are now sent to 1,432 communes spread over all the departments of France except that of Lozère.

A NOVEL and valuable application of electricity, designed to prevent the possibility of collisions on railways, is now the subject of experiment in the Marseilles station. It consists of an electric mirror, in which all the movements on a line 100 kilometres in length are brought vividly before the eye, and enables the station-masters to follow exactly the progress of every train. By this means it is hoped that all accidents resulting from delays or too rapid runs can be entirely avoided, and arrangements are being made for the general introduction into the stations of the new invention.

A VIENNA mechanic has recently succeeded, after many fruitless trials, in constructing a sewing machine which does not require the person working at it to submit to the unpleasant and unhealthy necessity of constant bodily exertion, viz., setting the machine in motion by the foot. Since, for pecuniary reasons, the application of electricity, steam, or water power was impossible, the inventor of the new machine was restricted to gravitation or elasticity, and he, preferring the latter force, has contrived to make springs strong enough to keep an ordinary sized machine in motion for hours. A system of cog-wheels is arranged underneath the surface of the table upon which the machine is fixed, and by a handle at the side the spring is wound up with the greatest facility. The velocity at which the machine works is entirely at the option of the person using it, and can be regulated *ad libitum*, and in the simplest manner.

OPPORTUNITY has been taken recently by MM. Raehlmann and Witkowski to observe the eye-motions of persons asleep, new-born children, blind persons, and also in circumstances presenting some resemblance to sleep, viz., drowsiness, intoxication, chloroformic sleep, and epileptic attacks, these cases having in common the failure of the will or the power for binocular vision. In every instance strongly uncoordinated movements were observed. The result is regarded as opposed to the idea of a mechanism possessed at birth for producing regular motions of the eyes, and as agreeing with Helmholtz's view:—“Though each eye has a quite independent muscular mechanism . . . we have only learned to perform those movements which are necessary for seeing a real point distinctly and simply.” Where this interest is not yet present, as in newly-born infants, or where it disappears, as in the case of the blind, and in the sleeping, there occur divergences from the law of adaptation.

THE German Verein zur Beförderung des Gewerbfleisses has offered extensive prizes for the invention of substitutes for caoutchouc and gutta-percha.

NEWS from South America states that powerful waterspouts were recently experienced at Callao, doing considerable damage in the town and its environs. On January 27 Callao suffered again severely from a repetition of the phenomenon known as the "tidal wave," from which so much damage was done in May last. Much destruction of buildings has resulted. On January 23 a strong earthquake, lasting thirty seconds, was felt at Iquique and Arica; shocks recurred on the 24th and 25th. On December 31 a violent thunderstorm visited Lima, accompanied by torrents of rain. The latter phenomenon is of extreme rarity in that neighbourhood, and during the present century has occurred there only once, viz., in the year 1804.

THE *Moniteur Vinicole* announces the surprising fact that the wine-production of France has not been diminished of late years, in spite of the devastations of the pernicious insect, phylloxera. During the five years, 1862 to 1867 (before the vast spreading of the plague), the annual production averaged 54,747,405 hectolitres. During the five following years (1867 to 1872) it rose to 56,527,129 hectolitres. After 1872, since when the phylloxera invasion began to reach its maximum height, the average annual production has not sunk below 56,000,000 hectolitres. The total of last year's produce amounts to 56,405,363 hectolitres, as against 41,846,748 in 1876.

THE statistics of the German Imperial Telegraph Office for 1877 have just been published. When the Telegraph Office was united with the Post Office there were 1,688 telegraph stations in Germany. At the end of 1877 this number had risen to 3,287.

THOSE desirous of sending objects of natural history from Guatemala (Central America) to the forthcoming Paris Exhibition are requested to communicate with M. A. Boucard, of 55, Great Russell Street, W.C., until the 20th inst. After that date all communications should be sent to the following address:—Legation de Guatemala, 3, Rue de Copenhague, Paris.

THE experiments on the practical value of the telephone, carried out by the German postal department, show that it is not adapted to supersede the telegraph on lines which are constantly in use. For local purposes and lines less frequently used it will, however, be introduced on a large scale, a large pecuniary saving being effected by the ease in obtaining officials who have not had to master the difficulties of telegraphy. The department has also introduced an apparatus for calling the official at the station to which a message is to be sent, so that an electric battery is now unnecessary for the purpose of summoning attention.

AUSTRALIAN colonists have noticed some strange peculiarities in bees imported from Europe, which, however unpleasant they may be to the agriculturist, are yet of the highest interest to naturalists. It appears that our European bees retain their industrious habits only for the first one or two years, when imported into Australia. While during that period they keep their hives in good order and yield a fair quantity of honey, they gradually cease to collect honey after that time, and soon become entirely barren.

MR. MURRAY has published in a neat little volume, Virchow's address at the German Association last autumn, on the Freedom of Science in the Modern State. We are glad this has been done, as the address is one well worthy the attention of men of science. It was our sense of its importance that induced us some months ago to publish in our columns a verbatim translation of the address, as well as translations of the addresses of Haeckel and Nägeli, on which Virchow's address is to a large extent a criticism and reply.

THE master of the *D. M'B. Park* (British barque), which arrived at West Cowes (I. W.), March 3, from Batavia, reports as follows:—January 29, at 7 A.M., in lat. 4.20 N., long. 21.45 W., saw several submarine volcanoes throwing large columns of water about 100 feet into the air, while the sea was in great commotion, as it is when there is a very strong under-current, the weather at the time being very cloudy, with rain, and nearly calm. The sound was like distant thunder.

VARIOUS theories have been offered of the sense of temperature. In a recent one by M. Hering it is represented that when at a given part of the skin we feel neither heat nor cold, the feeling of temperature at that part is, so to say, at zero. The main points of the theory are these: The feeling of temperature depends on the height, for the time being, of the temperature proper (*eigen Temperatur*) of the nervous apparatus of the skin, not on the rise or fall of this temperature (Weber) nor on the intensity and direction of the heat current (Vierordt). Every temperature of the nervous apparatus above the zero point is felt as heat, every one below as cold. The distinctness of the sensation of heat or cold increases with the distance of the temperature proper for the time being, from the zero temperature. The zero temperature is variable within certain limits. Every temperature of the nervous apparatus, felt as warm, causes a displacement of the zero point of the scale of sensation upwards, and every temperature felt as cold causes a displacement downwards. These ideas are developed by M. Hering, in a recent paper to the Vienna Academy.

M. LENGLEN, a physician of Arras, has recently described a remarkable perpetuation of physical traits. A certain M. Gamelon, in the last century, was sex-digital, having two thumbs on each hand and two great toes on each foot. The peculiarity was not noticeable in his son, but in each of the three subsequent generations it has been strongly marked, some of the children at present showing the malformation as distinctly as their great-great-grandfather. M. de Quatrefages has noticed, a few months since, a similar case in the animal kingdom. A six-toed cock having transmitted this peculiarity to his descendants, it has spread to such a degree, that in the district where it occurred the ordinary five-toed variety is no more to be met with.

LIME, strontian, and baryta have recently been obtained in the crystalline state by Dr. Brügelmann, of Düsseldorf (*Ann. der Phys.*, No. 11), by heating their nitrate salts till complete decomposition takes place. In this way are obtained the three oxides in (chiefly) microscopical crystals of the regular system, and exclusively hexahedra. While, however, in the case of strontian and baryta, this interesting fact and new example of isomorphism is recognisable only with aid of the microscope, the lime can be easily obtained in large crystals, observable with the naked eye. Dr. Brügelmann describes his method fully, as also the form and properties of the three crystallised alkaline earths.

It was pointed out some time ago by M. Herwig, that when strong induction shocks are sent through liquids they do not pass conformably to Ohm's law; there is at first a retardation of the electricities in the electrodes, and the equilibration which at length occurs is somewhat like a discharge, as in the case of a large condenser. The phenomenon has of late been more fully studied by M. Herwig, who describes various interesting experiments with reference to it in the *Annalen der Physik*, No. 12.

M. GASTON PLANTÉ describes at length in the last number of the *Annales de Chimie et Physique*, his newly-discovered method for the engraving of glass, a process which promises to be of widely-extended application. His attention was first directed to this line of investigation by the observation that glass moistened with a solution of ordinary salt was strongly attacked by currents from secondary piles. As perfected, his process consists in

immersing a plate of glass in a shallow basin containing a concentrated solution of potassic nitrate. It is encircled by a platinum wire also covered by the liquid, and connected with the pole of a secondary battery of fifty elements. The other pole consisting likewise of platinum wire covered with an insulator, is held in the hand and applied to those parts of the glass where it is designed to engrave. A flash of light is produced by every contact with the electrode, and a mark accompanies each luminous appearance. The depth and fineness of the lines described depend directly on the rapidity with which the electrode is moved, and the fineness of its point.

THE Deutsche Gesellschaft für öffentliche Gesundheitspflege has appointed a commission to co-operate with the government meteorological stations, in endeavouring to obtain the daily publication of the weather observations with probabilities for the following twenty-four hours, according to the American system.

THE additions to the Zoological Society's Gardens during the past week include two Brown Coatis (*Nasua nasica*) from South America, presented by the Hon. C. H. Wynn; a Palm Squirrel (*Sciurus palmarum*) from India, presented by Miss Barclay; two Rock Sparrows (*Petronia stulta*), South European, presented by Mr. D'Arcy Thompson; an Ocelot (*Felis pardalis*), a Red and Yellow Maccaw (*Ara chloroptera*), a Yellow Snake (*Chilobothrus inornatus*) from South America, two Black-capped Bitterns (*Butorides atricapilla*) from Africa, a Four-lined Snake (*Coluber quadrilineatus*) from Egypt, deposited; a Yellow-cheeked Amazon (*Chrysotis autumnalis*) from Honduras, purchased; a Red Kangaroo (*Macropus rufus*), an Indian Muntjac (*Cervulus muntjac*), born in the Gardens.

EXTENT AND PRINCIPAL ZONE OF THE AURORA BOREALIS

IN the *Wochenschrift für Astronomie*, Herr H. Fritz has recently compared his "Catalogue of Polar Lights," which contains notes of all auroræ which have been observed since 1846, with a publication of Herr A. Moberg, who gives an account of all auroræ observed in Finland during the years 1846 to 1855—some 1,100 in number. The comparison yields some interesting results which are not without importance for the theory of the phenomenon.

It appears that out of 2,035 days of the months from August to April, upon which auroræ were seen and which are entered in Herr Fritz's Catalogue, no less than 1,107 days were auroral days in Finland. Of these 1,107 auroræ 794 were simultaneously visible both in America and Europe, 101 only in Europe, while the remaining 212 were only seen in Finland. During the same period (1846 to 1855) 928 auroræ were seen in Europe or America which were not visible in Finland. All these figures of course refer only to the months from August to April, since during the summer months no phenomena of this kind can be observed in Finland on account of the brightness of the nights. As Herr Moberg's observations were collected from 128 different stations in Finland, we must conclude that only a very small number of auroræ remained unnoticed. We thus arrive at the conclusion that a great number of auroræ cannot have a very widely extended sphere, or that the causes of these phenomena must often be of a very local character (this is confirmed by several observations at high latitudes), while with another part of the phenomena the extension of their sphere or district of simultaneous visibility must be very considerable. The number of auroræ which were seen in Finland only—at least for which up to the present no data of observation elsewhere have been received—is very small (212, or only 19 per cent. of the total number seen in Finland). As the frequency of the phenomena increases—at the time of the maximum—the number of simultaneous observations in Finland and America rises, while the numbers of auroræ seen in Finland and Europe only, or of those exclusively seen in Finland, decrease. This agrees perfectly with the well-known law that with the increase of frequency of polar lights their intensity and sphere of visibility increase also. If we carefully take into account the less prominent phenomena the above proportions would be slightly modified, but most probably they would never prove that on any day when an aurora was visible

only in a small district in Europe, another one was simultaneously seen in America. Thus the comparison made by Herr Fritz contradicts Renou's view that the phenomena in America and Europe change periodically.

Of 2,878 days on which auroræ were observed in America during 1826 to 1855, there are 1,065 on which auroræ were also seen in Europe, so that at least every third observation was simultaneous in both parts of the world. For the years during which more exact observations were made, viz., from 1846 to 1855, and again from 1868 to 1872, we find that during the former period out of 1,691 auroras 657 were simultaneously observed both in America and Europe; and during the latter period out of 715 no less than 397, or far more than half the number. If the catalogues were more perfect the number of simultaneous observations would, beyond doubt, be found to be still greater. Some observations made in Scotland give similar results to those dating from Finland, but their publication must at present be delayed, since the American data for comparison are still wanting.

The local occurrence of auroræ does not speak favourably for the hypothesis which places the phenomenon among the cosmical ones. Some ten years ago Herr Fritz published his views with regard to the geographical distribution of auroræ, and constructed a system of lines which he termed Isochasmis—i.e., curves of equal frequency of auroræ. The outlines of this system were as follow:—The zone of greatest frequency and intensity of auroræ began near Barrow point (72° north latitude) on the northern coast of America; thence it passed across the great Bear Lake towards Hudson's Bay, crossing the latter at 60° N. lat., passing over Nain, on the coast of Labrador, keeping south of Cape Farewell; its further course was between Iceland and the Far Oer to the vicinity of the North Cape in Norway, and thence into the Arctic Sea. According to the observations then in possession of Herr Fritz, the line passed round Novaya Zemlya and Cape Tsheljuskin, approached the north coast of Asia, in the eastern part of Siberia, in the longitude of Nischni Kolymsk, and thence returned to Barrow Point.

Now after ten years, in spite of the vastly accumulated material of careful observations, there appears no necessity to change Herr Fritz's system of curves in any essential detail; indeed certain parts of the same, which were at first only based on probability and supposition, the part of the principal zone between the north of Norway and Nischni Kolymsk as an instance, we now know with perfect certainty to be correct. Nearly identical, perhaps entirely so, with the line of greatest frequency is the line which marks the limit of visibility of auroræ towards the pole or the equator; since to the north of the line in question the auroræ are only seen in the direction of the equator.

PARIS ACADEMY PRIZES FOR 1878

I. EXTRAORDINARY PRIZES.—Grand prizes in the Mathematical Science.—1. The application of the theory of elliptic transcendents or abelians to the study of algebraic curves. 2. It is known that the great axis of the orbit which a planet describes round the sun is not affected by any secular inequality of the order of the two first powers of the disturbing masses. Examine if there exists in the value of this great axis secular inequalities of the order of the cube of the masses, and, in the case where these inequalities are not rigorously destroyed, give the means of calculating their sum, at least approximately. The prize is a medal of the value of 3,000 francs. 3. Study of the elasticity of crystallised bodies, from the double point of view of experiment and theory. Prize the same as No. 2.

Grand prizes in the Physical Sciences.—Study of the mode of distribution of marine animals on the littoral of France. A medal of 3,000 francs value.

An extraordinary prize of 6,000 francs will be awarded as a recompense for any progress calculated to increase the efficacy of the French naval forces.

II. MECHANICS.—1. The Poncelet prize of a medal of 2,000 francs value, and a complete copy of Poncelet's works, are awarded to the work contributing most to the progress of the mathematical sciences, pure or applied, published in the course of the ten years preceding the judgment of the Academy. 2. A Montyon prize, a medal of 427 francs value, will be awarded to any one who, in the judgment of the Academy, is most deserving, by inventing or improving instruments useful to the progress of agriculture, the mechanical arts, or the sciences. 3. The Plumey prize, a medal of 2,500 francs value, awarded to the